***Thermodynamics:***

Use nested Styrofoam cups as your calorimeter. We will treat the Styrofoam like it loses no heat but we know it does lose heat.

Section 1

1. Derive a formula for finding Lf  for a known quantity of ice.

2. Develop an experiment to determine the heat of fusion of ice using the formula you derived for number 1 and using the materials listed above. Write a numbered procedure.

3. Using the procedure you developed in step 2, find the heat of fusion for your sample of ice and compare with the known value.

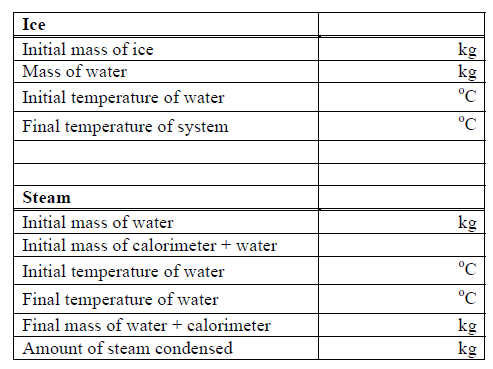
1. Derive a formula for finding Lv  for steam. Remember the transition from steam to water heat Q= -mLv because heat is leaving the system.

2. Determine the heat of vaporization for water

a. Weigh the calorimeter and water before and after adding the steam to get the mass of steam which condensed.

b. Start with cold water (below room temperature) and introduce steam under the surface of the water until the temperature rises to about 50°C.

c. Remove the steam hose, stir with the thermometer gently, and record the final temperature which should be the highest temperature.



**Section 1 - ICE**

1. Write your procedure here:

2. Derived formula for heat of fusion for water?

Show work:

3. Heat of fusion \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Percent Error \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Show work:

**Section 2 - STEAM**

1. Derived formula for heat of vaporization for water?

Show work:

2. Heat of vaporization \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Percent Error \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Show work:

**Overall**

What was good about this lab?

What would you do to improve it?

Write a conclusion paragraph. Discuss what you learned, how good your results were, why they were/were not good, etc.